IN THE SPECIFICATION

At page 3, please amend the entire page to read as follows:

-- Strength and stiffness of wood plastic composites ~~decreases~~ **decrease** when they are foamed. This decrease is generally inversely proportional to the density of the foam. As a result, currently available elements such as deck boards are either of relatively high density (0.8-0.9 g/cm^2) or have a dense unfoamed, structural layer co-extruded on the outside of the foam. The co-extrusion process requires the use of a second extruder, which increases production times and costs.

What is needed therefore is an apparatus and process for better controlling the gas injected in the material to produce a more structurally sound plank. Further, what is also needed is **an apparatus and process** that is more efficient, practical and economical.

SUMMARY AND OBJECTS OF THE INVENTION

By way of summary, the present invention is directed to an apparatus and method for producing a composite plank. The apparatus has an extruder with a plurality of dies connected preferably outside of the extruder. The extruder is likely connected to a hopper containing wood and plastic material. A container or cylinder, also preferably outside the extruder, includes an orifice for injecting a gas. The material thus may first be heated in the hopper and then extruded into the dies and cylinder connected thereto where the melt material is injected with gas. A lubricating assembly connected to the dies shapes and forms a composite plank from the material. A cooling tank is preferably attached to the assembly to further cool the plank. A conveyor having opposing belts ~~for~~ pulls the plank through the cooling tank. After exiting the cooling tank, a saw connected to the conveyor cuts the plank to size. The planks are then placed on a stacking table adjacent the saw. --

At page 4, please amend the first full paragraph (page 4, lines 1-12) to read as follows:

-- The cylinder may contain a number of additional features. For example, the cylinder is preferably pressurized and contains a plurality of pins located in the center of the orifice and between two channels so that material extruded therein is uniformly injected with gas to cause it to foam before moving into a die. The cylinder is preferably located outside of the extruder to better control the amount of a) pressure present therein and b) gas added to the orifice to produce a better, more consistent end product. The pins in the cylinder allow gas to flow into the cylinder but are constructed to prevent backflow into the pins. In one embodiment, the cylinder adds a high pressure gas, such as oxygen, between the dies which are not located inside of the extruder. In this embodiment, the cylinder is mounted after an adapter die and before a transition die. A gas generator, a pressure booster, and a temperature controller are preferably connected to the cylinder to provide the orifice therein with gas at a controlled pressure, moisture content, and temperature. --

At page 12, please amend the last full paragraph (page 12, lines 21-23) to read as follows:

-- The flow rate of the extruder 14 is typically between about 100 and 2500 pounds per hour. In the preferred embodiment the flow rate is approximately 300 pounds per hour with a temperature at approximately 270°F ~~(132C)~~ (132°C) - 325°F (163°C). –

At page 17, please amend the entire page to read as follows:

-- The data presented in Table 2 illustrate the synergistic effect of the added blowing agent and the volatile compounds present in the wood flour. Wood flour added to the composites in this trial was either undried or dried at one of three specific temperatures. As a result four different wood moisture levels were tested. These were 8.58% (undried), 6.21% (dried at 150°F), 3.47% (dried at 235°F), and 0.89% (dried at 325°F). As seen in Table 2, the lowest foam densities are obtained when adding CO_2 as an additional blowing agent, followed by adding air as an additional blowing agent. The effect of injection pressure on foam density varies with blowing agent. Increasing injection pressure of air causes a decrease in density ~~white~~ **while** increasing injection pressure of CO_2 causes an increase in foam density. Use of volatile compounds from the wood alone results in the highest foam densities. Foam density also is seen to decrease as the wood moisture level increases. This data indicates that low foam densities may be achieved through the process described here and that the addition of wood flour to the plastic resin enhances the foaming process.

2. The cellular material can be produced by extrusion of the wood plastic composite through a die designed to produce a hollow profile. This type of die typically has a mandrel that forms the interior of the hollow. This type of die may be of the type described in U.S. Patent 5,516,472 to *Laver*. When this type of die is used, extruding the material through the stranding die develops the pressure needed for the incorporation of the blowing ~~agent The~~ **agent. The** foam produced in this way can be allowed to expand freely or can be contained. If the foam is to be contained, a cooled calibrator whose inner surface matches the desired shape of the member is attached to the die so that the mandrel extends into the cavity of the calibrator. This results in the formation of a solidified skin on the exterior of the composite that has not been allowed to foam. The interior of the profile is not yet solidified when the extrudate reaches the end of the mandrel. This material is allowed to foam into the interior of the profile creating a solid foam core surrounded by an unfoamed skin. The profiles produced in this manner may be made in intricate shapes. The skin thickness and profile dimensions can be designed so that a member suitable for use as a deck board may be produced. –

At page 24, please amend the first full paragraph (page 24, lines 7-22) to read as follows:

-- The adapter die 195 is connected to the extruder 110. The adapter die 195 is preferably outside the housing of the extruder. In fact, all of the attached dies in the system 100 are outside the housing of the extruder 110. The ~~pressurize~~ **pressurized** cylinder or container 198 is connected to the adapter die 195. The container 198 ~~and~~ is preferably formed in ~~from~~ a first section and a second section. In one embodiment a pump 202 is connected to a gas generator and temperature controller 204 and is used to inject gas into the container 198. The transition die 200 is connected to the container 198. The stranding die 205 and a molding die 210 ~~file~~ **follow** preferably in sequence ~~that~~ **the** transition die 200. The heating unit 215 is attached to ~~this~~ **the** setting die 220 which is connected to molding die 210. The tempering block 222 ~~file is being~~ **follows** setting die 220 and contains an environment to allow the extruded material to continue to foam without any additional pressure or change in temperature. Following tempering block 222 is a lubricating assembly or calibrator 230. The calibrator 230 is preferably connected to a heating and cooling vacuum unit 235. A temperature controller 232 is connected to the heating and cooling vacuum unit 235. Following the calibrator 230 is a cooling tank 245 which is connected to a chiller 250 for further cooling the material 140 to form a foam-like plank 300. --

At pages 24-25, please amend the paragraph bridging pages 24 and 25 to read as follows:

-- As shown in Figures 3-5, container 198 is comprised into sections and has orifice 315 therethrough. The container 198 is preferably round like most of the dies. Contained within orifice 315 are pins 330. The pins 330 ~~with~~ are used to inject gas into the orifice and into the extruded material as it travels through the orifice and is divided into two channels. The material is divided ~~in~~ when it reaches a point at which the pins are mounted. As will be explained below, a dividing plane 319 is used to separate the material and move it into the channels. The pins are screwed into the cylinder and have built-in check valves to prevent backflow of the material into ~~a~~ gas injection ports. The pins are threaded and preferably have hex heads so they can be easily removed and replaced. --

At pages 25-26, please amend the paragraph bridging pages 25 and 26 to read as follows:

-- The pins 330 preferably have a hex head or an allen-wrench cavity so that the pins ~~and~~ **can** be tightened into the ports. These pins can be quickly mounted and removed for easy maintenance and minimum downtime. As also mentioned previously, a gas, ~~such CO2~~ **such as** CO_2, is injected into the main port with **a** pump which is connected to a generator and temperature controller. A connector valve may be threaded into the port 329 to connect to the pump via hose. The pins have a ~~stock~~ **stop** cock so that flow is only in one direction, i.e., outward. Therefore, material cannot be accidentally sucked up into the injection pins. Preferably, four pins are arranged in the vertical column like **the** order as best shown in Fig. 4. A mounting bracket 340 may be used to mount the pins to the cylinder or container 198. The pins 330a, 330b, 330c, and 330d are arranged in descending order from first channel 320 and the second channel 325. --

At page 26, please amend the first full paragraph (page 26, lines 3-12) to read as follows:

-- Tempering block 222 ~~are~~ **is** best shown in Figs. 6 and 7. The calibrator 230 is best shown in Figs. 8 and 9. The makeup of the tempering block and calibrator are very similar, ~~in.~~ However, preferably the tempering block 222 does not contain any attached hoses for circulating lubricating fluids for heating and/or cooling the tempering block. Alternatively, hoses are connected to the calibrator for heating and cooling the calibrator plates preferably by circulating a lubricating fluid that has been heated or cooled. The plates in the tempering block and the calibrator are movable for specific sizing of the plank's profile. For example, plates for forming a smaller profiled plank can be replaced with plates for forming a larger profiled plank. The plates can also be removed for cleaning as some extruded material may be deposited thereon. --

At page 26, please amend the second full paragraph (page 26, lines 13-19) to read as follows:

-- More specifically, Fig. 6 shows tempering block 222, and which has a top section 222a and a bottom section 222b. The top and bottom sections close to ~~created~~ **create** channel 222c. The tempering block sections are secured by fasteners or latches 223 and 224. Fig. 7 shows the tempering block sections 222a and 222b opened. Inside each section is a series of plates 225. Upper plates 225a are secured by fasteners 226a. Bottom plates 225b are secured by fasteners 226b. The plates 225 can be removed to change the profile and/or shape of the extruded material to make planks of various shapes. --

At page 26, please amend the third full paragraph (page 26, lines 20-27) to read as follows:

-- Attached to the tempering block 222, and shown in Fig. 8, is a lubricating assembly or calibrator 230. Calibrator 230 also has a top 230a and bottom 230b which when enclosed form a channel 230c. Various hoses**, e.g., a hot fluid hose 233 and a cold fluid hose 234,** are connected to the top and the bottom sections of the lubricating assembly 230. ~~**For example, a hot fluid hose 233 and a cold fluid hose 234.**~~ In the preferred embodiment, cold and hot lubrication liquids flow through these hoses~~,~~ **;** for example**,** water may be used as such a liquid. Other assembly 230 hoses 236a-236c as well as 237a-237c may be present. Other hoses such as 238 may ~~**provided**~~ **provide** negative pressure or a vacuum to the assembly 230. –